Roll No. : .....

Total No. of Questions : **11**] [Total No. of Printed Pages : **3**

BPF–2208

M.Sc. (Final) Examination, 2022

MICROBIOLOGY

Paper - V

(Industrial and Food Microbiology)

*Time : **3** Hours*] [*Maximum Marks : **75***

Section–A **(Marks : 2 × 10 = 20)**

Note :– Answer all *ten* questions (Answer limit **50** words). Each question carries **2** marks.

Section–B **(Marks : 5 × 5 = 25)**

Note :– Answer all *five* questions. Each question has internal choice (Answer limit **200** words). Each question carries **5** marks.

Section–C **(Marks : 10 × 3 = 30)**

Note :– Answer any *three* questions out of five (Answer limit **500** words). Each question carries **10** marks.

Section–A

1. (i) The vessel of an industrial fermenter is made up of which material ?

   (ii) Explain sampling in relation to fermentation process.

   (iii) Give names of *two* methods used for maintenance of industrially important cultures.

(iv) Give example of *two* methods used to get sterile air for fermentation process.

(v) Draw a labelled diagram of mechanical foam breaker.

(vi) Liquid-liquid extraction is associated which part of the fermentative production process :

(a) Upstream

(b) Fermentation

(c) Downstream

(d) Formulation

(vii) Which microorganism is used for the production of Baker's Yeast ?

(viii) What do you understand by Single cell oil ? Explain with one example of the same.

(ix) Give *two* examples of methods used for food preservation.

(x) Write full form of the following :

(a) FDA

(b) HACCP

Section–B

Unit–I

2. Write a note on the history of wineries.

Or

Write a note on micro-carrier bioreactor.

Unit–II

3. Write a note on screening of antibiotic producing microbial cultures.

Or

Write a note on common inhibitors of fermentation processes.

Unit–III

4. Write five differences between batch and continuous fermentation processes.

Or

Write a note on solvent recovery of microbial metabolites.

Unit–IV

5. Write about the production process of *Spirulina*.

Or

Give a brief description on the fermentative production of any organic acid.

Unit–V

6. Give an illustrative account on the production of cell growth factors.

Or

Write a note on chemical preservation of foods.

Section–C

7. Give a comprehensive account on methods of cell immobilization and industrial applications of immobilized cells.
8. Give details on various nutritional and physical parameters which are evaluated for media optimization.
9. Write a detailed note on methods used for downstream processing of various microbial metabolites.
10. Write notes on the following :
    (i) Citric acid production
    (ii) Production of tetracycline
11. Give an illustrative account on types of vaccines and their production.